

**U.S. Army-Baylor University**  
**Graduate Program in Health Care Administration**

**AN ANALYSIS OF HIGH FREQUENCY USERS**  
**OF THE**  
**MARTIN ARMY COMMUNITY HOSPITAL EMERGENCY ROOM:**  
**FACTORS CONTRIBUTING TO HEIGHTENED UTILIZATION**

**Submitted to the Faculty of Baylor University**  
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## ABSTRACT

A study of the Martin Army Community Hospital emergency room population was undertaken to 1.) identify the frequent users, and 2.) determine which variables were statistically significant determinants of high frequency emergency room use. Patients were categorized by number of visits made (1, 2, 3, 4) to the emergency room in a six-month period, and data collected retrospectively from the CHCS database for two consecutive time periods. Patients appearing in identical visit categories in both time periods were further categorized as frequent users and sampled; patients with only one visit in one year were used as a comparison group representing normal use. A survey was prepared based upon the significant variables reported in the literature. There were 161 responses to a mailing of 654 letters.  $\chi^2$  analyses of the responses showed no statistical significance. The reasons most frequently cited by patients for emergency room use were 1.) perceived the condition was an emergency, and 2.) the emergency room has after duty hours care.

People will use health care facilities according to their perceived needs rather than according to the expectations of those who have designed the system. Efforts to expand access to alternative outpatient clinics may have little impact on emergency room use for nonurgent conditions if patients believe that their problems constitute an emergency. However, the evolving discipline of demand management holds promise for being able to modify patient perceptions through education.

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## CHAPTER 1

### INTRODUCTION

In an era of large national budget deficits and increased focus on governmental efficiency, few organizations are escaping budget curtailment. As its contribution to fiscal austerity measures, the Department of Defense (DoD) has reduced the armed forces personnel end-strength by over fifty percent in the last six years (Xenakis, 1996). The medical departments of the services have faced concomitant reductions in personnel and budget greater than the reduction in beneficiaries. At all levels of organization, commanders are being asked to wring greater efficiencies from their hospitals in order to continue to medically support their eligible beneficiaries; the Army Medical Department (AMEDD) is doing more with less.

Toward this end AMEDD commanders are aggressively seeking to eliminate programs that are not cost effective and to invest in those that will reap dividends. Formerly, the United States Army Medical Command (USAMEDCOM) provided ample, centralized direction to its subordinate commands. However, in the new environment, the authoritarian ethos of the past has given way to a new paradigm of decentralization and empowerment (Xenakis, 1996). With the recent creation of Regional Medical Commands (RMCs) and the implementation of the TRICARE managed care initiative, today's military healthcare system is seeking to match the cost savings and efficiencies garnered by the civilian healthcare market under managed care.

Managed care has cut costs by minimizing hospital based care in favor of less costly

outpatient care. A good example of the savings possible can be found in the hospital emergency room. In a study using hospital emergency room visits between 1991 and 1993, Williams found the marginal savings realized by redirecting a nonurgent patient to an outpatient clinic to be \$88 (Williams, 1996). Due to this comparatively high cost of services provided relative to outpatient clinics, inappropriate emergency room users are steered towards more appropriate and less costly settings for treatment (Williams, 1996).

### *Description of the Organization*

Martin Army Community Hospital (MACH), a 107-bed community hospital, is located at Fort Benning, Georgia. Fort Benning is a U.S. Army Training and Doctrine Command (TRADOC) installation and is also the "Home of the Infantry." The post has tenant organizations from Forces Command (FORSCOM), Special Operations Command (SOCOM), and Medical Command (MEDCOM). Of particular note, the Army Parachutist and Ranger Schools, as well as infantry basic and advanced training courses, are conducted at the post. This high impact, hazardous training has a greater potential to result in accident and injury necessitating medical care.

Erected in 1958, MACH serves a population of approximately 75,000 active duty beneficiaries, Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) beneficiaries, and Medicare-eligible beneficiaries. MACH is a large MEDDAC with 1,330 employees and an annual operating budget of 92.3 million dollars (Halaby, 1996). The professional staff includes 120 physicians and 145 registered nurses. Services include those provided by most full-service community hospitals, including emergency room, family practice,

and psychiatric. The hospital also operates satellite health clinics at Dahlonaga, Georgia and at Eglin Air Force Base, Florida in support of the Army Ranger School. MACH also hosts a Family Practice Residency Program, the clinical portion of the Army's Physician Assistant Program, as well as the Army-Baylor residency for health care administration.

### *Conditions Which Prompted the Study*

In July 1996, MACH and the Southeast Regional Command implemented TRICARE in support of DoD efficiency efforts. In September, 1996, at the beginning of the new fiscal year (FY), budget decrements were distributed to every MEDDAC. A significant portion of the decrements were reported to be the result of relative inefficiencies in utilization management as measured by bed-days and admissions per thousand (Xenakis, 1996). The reductions were apportioned among facilities based upon their relative inefficiencies. MACH received the largest utilization management budget decrement in their region. Targeted at inpatient utilization practices, this budget reduction was the first instance under TRICARE of budget being tied to utilization management.

As the focus of management effort shifts away from inpatient care under TRICARE, there will be a requirement to more closely manage outpatient care utilization. In conversation with COL Markelz about subject topics for this Graduate Management Project (GMP), outpatient utilization was identified as an area of perceived weakness for the hospital. In order to focus effort on that area, a MACH Process Action Team (PAT) had already been chartered by the hospital commander to investigate and implement a demand management program targeting appropriate outpatient resources utilization. After further discussion, an investigation into

ambulatory clinic utilization with a focus on demand management became the area of interest for this GMP. To narrow the scope, the emergency room and its "frequent user" subpopulation became the focus of research. This subpopulation consumes a disproportionately large share of resources because of repeat visits.

### *Statement of the Problem*

This project seeks to answer the question, "What are the underlying patient factors contributing to frequent utilization of the emergency room?" The management of outpatient utilization is essential in the capitated environment associated with managed care. However, before utilization can be effectively managed, the factors underlying the utilization pattern must be identified. Because utilization of the emergency room may occur as a result of deficiencies elsewhere in the outpatient treatment system, an understanding of the determinants of its use could have implications for demand management and the planning of effective and efficient interventions elsewhere in the outpatient healthcare system.

### *Literature Review*

Over the past decade businesses have tried to control healthcare utilization, and in turn, costs, by managing the supply of healthcare. The use of gatekeepers in Health Maintenance Organizations (HMOs), restricted supplier networks as found in Preferred Provider Organizations (PPOs), financial incentives to providers, admission precertification, hospital concurrent review, and retrospective review are examples of mechanisms utilized to manage the supply of medical care. Conversely, demand management helps patients manage their actual and perceived need for health care services (Powell, 1995).

According to Vickery (1995), demand management has four components:

1. morbidity,
2. perceived need,
3. patient preference, and
4. non-health motives.

Vickery (1995) suggests that the components of perceived need and patient preference have the most potential for increasing appropriate utilization and thereby reducing costs. Perceived need is defined as a patient's view of the illness and the health services required. Vickery (1995) further suggests that the factors underlying perceived need are:

1. knowledge of risks and benefits,
2. perceived efficacy of treatment,
3. ability to assess the problem,
4. perceived severity of the problem, and
5. level of confidence in the patients own ability to self-manage the problem.

Patient preference is defined as the patient's role in shared decision making with a healthcare provider. Lynch (1993) suggests that encouraging shared decision making can alter the usual pattern of care.

Demand management is information-based, but also incorporates the factors underlying the utilization as critical components in strategy formulation. Cognitive skills, social support, sense of self-efficacy, and cultural norms impact the patient's decision to seek health care (Vickery, 1996). Understanding the determinants of utilization is logically one of the first steps in modifying utilization patterns (Williams, 1996). At this juncture, the focus of the literature review

narrows to factors associated with utilization of the emergency room.

The emergency room is often the entry portal of the hospital system. Inappropriate utilization of the emergency room may represent failings in the outpatient healthcare system and present an opportunity for focused demand management. Past studies have documented the increased utilization of the emergency room. Usage increased by an estimated 400 percent from 1945 to 1955, with a projected growth rate of 15 percent per annum. The research concluded that much of the increase is accounted for by use for nonurgent conditions (Shortliffe, 1958).

More recent studies demonstrated results that concur with those found by Shortliffe. Despite the dramatic increases in emergency room use, an estimated 85% of emergency room visits are made for non-life threatening reasons (Padgett, 1992). Other studies have suggested that the appropriate use of emergency rooms is anywhere from 15% to 50% (Derlett, 1995). In a study of one emergency room, the following factors were identified as affecting the proportion of nonurgent to urgent cases:

1. prior relationship with a personal physician,
2. age,
3. residential stability,
4. minority group status, and
5. geographic proximity to the emergency room (Weinerman, 1966).

Subsequent studies have provided mixed support for Weinerman's findings. Parboosingh et al. (1987) concluded that:

1. number of hospital admissions,
2. multiple sources of health care, and

### 3. attitude toward health care use

were most important in predicting emergency room use.

Some studies suggest that lack of access to primary health care results in inappropriate use of the emergency room. For example, Grumbach (1993) found inappropriate emergency room use most likely to occur in lower socioeconomic classes who have no regular source of primary care. In a 1983 study, a retrospective analysis of 1,003 patient records found that patients presented to the emergency room with nonurgent conditions more frequently when they did not have a family physician (Haddy, 1987). Buesching (1985) also found the lack of a personal physician as a pervasive influence on nonurgent emergency department utilization. On the other hand, findings of a 1995 study of nonurgent emergency room utilization suggested that having a non-regular source of medical care was not associated with care seeking behaviors (Gill, 1996).

Patient age has been shown to be a determinant of emergency room utilization. The elderly have been found to be more appropriate users of the emergency room than younger persons (Parboosingh, 1987). However, other research suggests that age is not a significant determinant (Haddy, 1987).

Residential stability is also cited as a significant factor in emergency room utilization. In a pediatric population, having child care experience or immediate access to a family member with child care experience was associated with decreased emergency room utilization (Oberlander, 1993). This data supports the hypothesis that a highly mobile population will have a higher incidence of emergency utilization, especially if the population is of childbearing age.

Socioeconomic status is frequently cited as a determinant of emergency room utilization. Jacobs' 1971 study found the utilization rate for low socioeconomic populations to be six times



that of high socioeconomic population. Davidson (1978) demonstrated that inner-city populations with low socioeconomic status have higher utilization rates for nonurgent care than do suburban populations. Davidson's study suggested that people in the lowest socioeconomic class were the most likely to have no primary care manager, a finding similar to that of Grumbach (1993) cited earlier in this report. However, Davidson also found that the remaining socioeconomic classes were not much more likely than the lowest socioeconomic class to have a primary care manager.

Results of other studies conflict with the results above suggesting that socioeconomic status is a determinant of emergency room utilization. For example, Shesser (1991) found no statistically significant relationship between nonurgent use of the emergency room and the factors of race, education, and economic background. Instead, this research found rapid access to professional medical attention to be the utilization determinant common to all study groups. Other research corroborates Shesser's findings but does not evaluate the variables of race, education and economic background for effect on utilization (Baker, 1995).

Contradictory results in determining factors contributing to frequent use of emergency room resources can best be attributed to the fact that no two emergency rooms service the same type of patient population, and determinants of use differ by population (Torrens, 1970). It follows that one standard model for dealing with emergency room populations may not suffice in all organizations (Jones, 1982).

The literature that focuses on the frequent user of the emergency room is very limited. In a 1978 paper, Ullman et al. defined "frequent users" as those presenting to the emergency room three or more times in a one year period; he compared them to those that used the facility only

one time during the year. This study found that in a one year period, 58.5 percent of emergency room patients used the emergency room once, 19.2 percent used the emergency room twice, and 22.3 percent used the emergency room three or more times. Ullman et al. (1978) found that the following variables were significant predictors of utilization:

1. race,
2. method of payment,
3. type of complaint (accident or non-accident),
4. services rendered (none/exam only/additional services/admitted), and
5. disposition (home/private MD/clinic/admitted/ or other).

Three-fourths of the visits made by the "frequent users" were for reasons other than accidental injury, and half of the visits made by the frequent users did not receive services other than examination. The authors concluded that high frequency emergency room users were good candidates for interventions that would shift their utilization to a more appropriate and less costly outpatient setting.

### *Project Purpose*

The purpose of this project is to determine the underlying variables contributing to high frequency utilization of the emergency room at MACH. Further, and beyond the scope of this project, is the expectation that results from this project will be utilized by the MACH Demand Management Process Action Team to structure an intervention aimed at reducing inappropriate emergency room utilization at a future point in time. Inappropriate utilization is comprised of two categories of events: 1.) a visit that is triaged as nonurgent, and 2.) a visit categorized as

emergent or urgent that could have been prevented with some type of medical or educational intervention. An example of an emergency room visit that might have been prevented is a patient with hypertension who stops taking blood pressure medication and has an emergent incident as a result. Any variables that were identified in this project as being determinants of high frequency emergency room use (as determined via statistical analysis) would then be classified into one of the two categories above, and interventions planned and analyzed. The identification of this second population is interesting, but beyond the scope of this study. To accomplish the purposes of this study, the following objectives were required:

1. Identify the high frequency users of the MACH emergency room over a one year period.
2. Identify a patient group against which comparisons of frequent emergency room users can be made. This group is comprised of a sample of patients that utilized the emergency room only one time during the year of interest.
3. Develop a questionnaire based on determinants of emergency room utilization as identified in the research literature.
4. Administer the questionnaire to the patients identified in the user groups of interest.
5. Analyze data and report the results.

## CHAPTER 2

### METHOD AND PROCEDURES

The data was obtained by means of a structured questionnaire administered to the frequent user group and the comparison group. Missing data was obtained, as necessary and appropriate, by abstraction from hospital records stored in the CHCS database. The data obtained from the questionnaires for each population was analyzed using frequency comparison, Contingency Table Analysis, and tests of the Chi-square distribution. A comparison of the frequent user results with the comparison group results was accomplished to ascertain statistically significant determinants of choice behavior for the frequent users.

#### *Data Sources and Collection*

The identification of frequent users and comparison group users was made via the Composite Health Care System (CHCS). The CHCS is a LAN-based, mainframe-hosted patient database. It serves multiple purposes; not only does it identify the demographics of hospital users, but it serves as an order entry port for medical staff to obtain laboratory, radiology and pharmacy procedures and prescriptions, then serves as a feedback mechanism that displays the order results. In addition, the CHCS database system has an appointment module that aids in clerical scheduling of patient appointment times and serves as a tracking and reporting mechanism for those appointments.

CHCS ad hoc queries were performed within the patient appointment module in order to identify patients appointed to the emergency room. Patients are appointed by the emergency

room clerk upon arrival at the emergency room. CHCS has been operational at MACH for two years and data is available for the entire two-year period. Ad hoc queries were used to identify patient populations who visited the emergency room for the one-year period between October 1, 1995 through September 30, 1996 (Appendix A). Once patients within the user populations of interest were identified, a questionnaire was mailed to samples of the populations. The methodology used in collection is presented in the paragraphs below.

A concern from the outset of this project was that when patients, particularly high frequency of use patients, were selected into groups, their frequent visits might represent an acute emergent episode comprised of several, separate visits. What was desired was a sampling of frequent users who used the emergency room for possibly nonurgent or other reasons, over a fairly long duration. Thus, it was determined that if a patient presented at the emergency room "X" number of times during period 1, and also presented at the emergency room "X + Y" number of times during period 2, the patient was truly a frequent user. Due to database ad hoc limitations, the trend was developed using an "X + X" algorithm; that is, we queried for patients who had visited the emergency room the same number of times in both time periods. Another reason for establishing "trends" for patients was for the future use of the Demand Management PAT. Specifically, the capability to gather data longitudinally via CHCS and spreadsheet manipulation would allow for more meaningful measurement of outcomes following demand management interventions.

First, it was essential to collaborate with the CHCS database administrator to determine if CHCS could support the requirements of this project. After successive iterations and refinements of ad hoc queries over a period of four to five months, the CHCS database administrator

developed acceptable, although not optimal, capability to meet data requirements of this project. It should be noted that the limitations were not a function of the administrator, but of the CHCS design and structure. The queries that were finally used for this project identified patients who went to the emergency room one, two, three, or four times between the dates of October 1, 1995 and March 31, 1996 (referred to as time period "1"); they also identified patients who went to the emergency room one, two, three or four times between the dates of April 1, 1996 and September 30, 1996 (referred to as time period "2"). Thus, eight ad hoc queries were generated to query for four groups of patients for each of two time periods.

All further data manipulation and analysis was performed on a 486 PC. The ad hoc query results were forwarded to the PC in the form of sixteen ASCII text files (two per database query retrieval) attached to a Lotus Corporation CC:mail letter. The files had to be e-mailed to the PC computer system because they were so large that even when compressed (zipped), they exceeded the capacity of a 1.4 megabyte floppy disk. In all, there were more than 30,000 patients and accompanying records that were identified with the eight ad hoc queries.

Each ASCII data file in e-mail was downloaded from e-mail to the PC for manipulation. Microsoft Word software was used to "clean" the data records. Cleaning the data was as critical as it was time-consuming. The files contained CHCS header and footer data as well as formatting characters which had to be removed in order to make the file importable to a spreadsheet software application. From this point, the 30,000+ patient records were imported into Microsoft Excel on that was hosted on the PC. They were imported into Excel so they could be utilized more effectively by a statistical package that was used. Microsoft Excel was selected as the spreadsheet application primarily because of its capability to display and manipulate 16,000+ records per

application. However, at this juncture, Excel was not powerful enough to perform the next procedure, which was that of identifying "trend" data. As a result, the statistical package, Statistical Software Package of the Social Sciences (SPSS), was used for the step of trend data identification.

In order to determine which patients had an emergency room visitation "trend" of one visit during time period 1 and one visit during time period 2, two visits during time period 2 and two visits during time period 2, and so forth, it was necessary to merge the results of the eight ad hoc queries (16 ASCII text files now in Excel) and then extract duplicate records. The merge of files for the two time periods was done on SPSS.

It is important at this point to note that each of the four patient groups had four associated CHCS text files - two files were associated with each of the two 6-month time periods within the year of interest. Thus, each patient within a group had their records contained in two different files; each of those files contained two different portions of a patient's CHCS record. However, for any patient, both files also contained a unique data field identifier that served to "link" the two portions of each patient's record, resulting in the complete patient record. Thus, the "merging" of files in SPSS as discussed above was actually the "linking" of patient record segments using a unique data field. A linked (complete) record for each patient within a group had the data fields shown in Table 1.

Table 1. Patient Record Data Fields From CHCS

a. Name	I. State
b. Gender	j. ZIP code
c. Age	k. Home phone no.
d. Family Member Prefix (FMP)	l. Work phone no.
e. Sponsor SSN	m. Date of visit
f. Location of patient records	n. Time of visit
g. Street address	o. Triage category
h. City	p. Chief complaint

Prior to exportation of data from Excel to SPSS, all records were sorted by the unique data field (the linking field), FMP/SSN, in ascending order, using Excel. The data was then exported to SPSS and combined into one SPSS file per patient for both 6-months time periods, within each frequency of use patient group. Each "combined" SPSS file was then sorted by the data field FMP/SSN, yielding a combined file organized in ascending order by FMP/SSN; this resulted in duplicate records being displayed adjacent to each other. It was necessary to display the information in this format for easier manipulation and extraction of duplicates using the Excel spread sheet formulas. The resulting SPSS file was then partitioned and exported back into an Excel workbook data file in the form of two separate spreadsheets. The SPSS file had to be partitioned into two separate Excel spreadsheets due to Excel's size constraint of being able to manipulate 16,383 records per sheet.

At this point the data could be analyzed to determine which patients had a trend over a full one-year period. The identification of "trend" patients was accomplished by analyzing the Excel



workbook for duplicate FMP/SSNs. As stated earlier, prior to the merger of the data files in SPSS, each record in each data file was unique. By merging and then counting duplicated records, those patients with equal numbers of visits within each of the two time-periods could be extracted. The method utilized an Excel function that provides for a logical comparison of equality between multiple data cells. This "OR" function identified all duplicate records and, by default, all unique records. The identification of unique records was particularly important with respect to analysis of data for patients within the one-visit-per-year group, because those records that were not duplicated in each period were, by default, defined as patients with one visit per year. Patients with only one visit per year were qualified to be in the comparison group; the actual sample of this population was randomly selected. Table 2 reflects the number of patients that fell into each frequency of use group after the trends were determined and records extracted.

Table 2. Trend Data Between Periods 1 and 2 By Frequency

Visits	Period 1	Period 2	Trend
1	12,027	11,270	1,886*
2	2,948	2,501	211
3	855	726	36
4	304	256	10

\*Note: There were 19,525 patients with only one visit over the two six-month periods.

#### *Determination of Sample Size*

For the purposes of this project, high frequency users were defined as patients who had four or more emergency room visits in a one year period, which is one visit per year more than the

frequent user criteria found in the literature. Four visits was chosen as the criterion for this project because it was felt that clearer distinctions between user characteristics might be found. Thus, the "trend" patients in the 4, 3, and 2 visit subpopulations were combined, and all records in the this frequent user group were used for survey purposes. Samples from both the 2 visit per year (1 visit per time period) and the one visit per year subpopulations were randomly selected by the SPSS random selection application. These 2 visit per year and 1 visit per year sample sizes are approximately 10 and 1 percent, respectively, of their population sizes. Although these two sample sizes are not equally proportional to their respective population sizes, their properties can still be generalized to the populations because they were randomly selected (Kerlinger, 1986).

Table 3 depicts the sample sizes used.

Table 3. Sample Sizes

Groups	Subpopulation	Trend Size	Sample Size
Comparison	1 Visit Per Year	(19,525)	189
Intermediate	1 Visit	1,886	208
Frequent Use	2 Visits	211	211
	3 Visits	36	36
	4 Visits	10	10

### *Survey Processing*

The Microsoft Word software was used to prepare the survey for mailing. Questionnaire, mailing envelope, return envelope, and the letter requesting the patients assistance were all completed using the MicroSoft Word mailmerge feature in conjunction with the Microsoft Excel spreadsheet containing the records to be sampled. The stamped, self-addressed return envelope

as well as the survey, contained a coded identification number to protect patient privacy and to allow the completed and returned survey to be associated with the existing data record. There were 654 questionnaires mailed. A random inspection of records was made to verify that the data provided by CHCS was accurate for number of visits. For the purposes of this study, frequent users were defined as patients with a frequency trend of two visits in each of the two consecutive six-month periods. This allowed for inspection of a complete year's worth of data and also gave the study a more longitudinal design. Sample size of the comparison group and frequent users was dependent upon their population sizes.

The questionnaire is presented in Appendix B. Prior to administration, the questionnaire was reviewed for validity and ease of use. Validity of survey items was established by a thorough review of the literature and close patterning of questions with those asked on other research surveys. The questions gauge the presence of various determinants of individual choice behavior that led to the patients decision to go to the emergency room for treatment. Specific determinants addressed were:

1. Chronicity of condition - how long it has persisted
2. Association with a primary care manager - knowing the provider's name
3. Socioeconomic - monthly pay
4. Perception of available alternatives - operating hours, appointment requirements
5. Educational level - stratified
6. Patient perception of illness seriousness, pain, physical function and the need for immediate care
7. Prior medical consultation - Was the visit the result of a referral?
9. Access - enrolled in TRICARE or a clinic
10. Geography - zip code and approximate driving distance
11. Treatment noncompliance issues
12. Time and the day of the week
13. Social support system - Presence of anyone to ask for medical advice

14. Frequency of prior hospitalizations - number in the last year
15. Severity of psychosocial stressors over the past year - indebtedness, marital difficulty, death of family member, etc.
16. Other determinants reported by patients

The length of time required to complete the form was kept to under five minutes. The questionnaire was mailed to the address of record as recorded in the CHCS. Each questionnaire included a letter from the Deputy Commander for Administration requesting the patient's assistance and outlining Privacy Act issues. Missing data was negligible and obtained from medical records as necessary and appropriate. When missing data was unavailable the individual patient survey response was excluded from analysis.

#### *Data Analyses*

Frequency analysis was used as the primary method of analysis. Cross-partitioned tables were used to report frequency, organize data for calculation of associations, and further statistical analysis. A cross-partitioned table is a numerical tabular presentation of data, usually in percentage or frequency form, in which variables are cross-partitioned in order to study the relations between them (Kerlinger, 1986). The use of cross-partitioned tables was appropriate because all but one of my variables were nominal. An example of nominal data used in the study is the coding of a number '1' to represent family income below \$9,999 in the variable INCOME. The number '1' has no meaning or significance unless it is associated with the attribute being measured; in this case an income interval. The only continuous variable in this study was AGE. This was artificially converted to nominal data by using consecutive intervals to group the data. The consecutive intervals were uniform 12 year increments which allowed for a break point at age 65 for the purpose of visualizing the Medicare eligible population. While median and range of the

age data was reported, the only meaningful way to make comparisons with the other variables was to convert it to a nominal form.

Cross-tabulations were utilized to test two variables while controlling for a third variable. Virtually all of the analysis was done with 2 X 2 tables using row and column percentages for visual inspection of differences. The analysis was aided by the statistical software program STATISTICA, Version 7.

After I performed the frequency analysis on cross-partitioned tables, a decision would be made regarding whether further analysis was necessary to test for independence of the variables in question. If the cell row percentages were roughly equal across all frequency groups in the dependent variable Groups, then I would compare the next variable with Groups in a new 2 X 2 table. Because of the number of intervals in some variables, (e.g. education level), it was necessary to rotate the axis of the variables so that the output would fit in a table. In these cases I read the column percentages to arrive at the conclusion of whether or not further statistical analysis was required. When statistical analysis was required, the  $\chi^2$  statistic was employed.

The  $\chi^2$  statistic is the most frequently used statistical test when dealing with nominal data. It is simple and one of the most useful tests for dealing with variables coming from what is hypothesized as two independent populations. The statistic has two underlying assumptions:

1. The sample data items are obtained through random selection.
2. The expected frequency for each cell in the table is at least 5.

The following procedure was used when testing for whether the data were cross classified in independent ways:

STEP 1. State the Null and Alternative Hypotheses.

$H_0$  = Variable GROUP is independent of Variable GENDER.

$H_A$  = Variable GROUP is not independent of Variable GENDER

(or) One variable is dependent on (or related to) the other.

STEP 2. Select the level of significance. Alpha = .05 for each analysis.

STEP 3. Determine the test distribution to use.  $\chi^2$  must be used with the appropriate degrees of freedom.

STEP 4. Define the rejection region. The rejection region is defined as any computed  $\chi^2$  statistic greater than the look up table value.

STEP 5. State the decision rule.

Reject  $H_0$  and accept  $H_A$  if the computed statistic is > the lookup value.

Otherwise fail to reject  $H_0$ .

STEP 6. Compute the  $\chi^2$  statistic. This is accomplished by STATISTICA statistical software.

STEP 7. Make the statistical decision. Either accept or reject  $H_0$  based upon the criteria established in STEP 5. If the null hypotheses is rejected then accept  $H_A$ .

### *Reliability and Validity*

Reliability is the consistency with which an instrument measures the attribute that it is supposed to measure. Validity refers to the degree to which an instrument measures what it is supposed to be measuring, and is dependent on reliability. Issues of both reliability and validity were apparent in the methodology of this project. The instrument, a questionnaire, was designed to elicit information about the specific determinants of emergency room use that were addressed

earlier in this paper. The questionnaire was mailed to the sample of respondents as shown earlier in Table 3. This sample selection process in itself might lead to questions of validity.

Major concerns with both reliability and validity are found in the survey instrument used in the study. Generally, the self-administered mail survey instrument has the advantages of being simple to administer and economical. Also, mail surveys can also be structured for anonymity to encourage honesty and candidness. These positive aspects of mail surveys are the reasons that the mail survey was used in this project. But, mail surveys can be problematic due to low response rates; low rates of responding make valid generalizations to the population questionable (Kerlinger, 1986). Kerlinger (1986) also reports that response rates below 50 percent are not uncommon with mail surveys. It appears that generalization is difficult, in part, due to the self-selection characteristics of the portion of the population that decides to complete and return the survey. Mailed surveys, unlike interview surveys, also result in an inability to check or follow up responses, which leads to accuracy and reliability issues.

This project's survey used close-ended (fixed-alternative) items which required the respondents to answer the questions in a way that fit the response categories given. The advantage of this type of technique is greater uniformity of measurement and ease of coding, thus greater reliability. The disadvantage is superficiality; without follow up questions this type of technique does not ordinarily get below the surface of the issues (Kerlinger, 1986). And, according to Kerlinger (1986), fixed-alternative questionnaires may also irritate respondents who find none of the alternative answers suitable or force them to answer in a way that does not reflect their actual opinion.

Other concerns with reliability and validity center around the integrity of the CHCS data

base. The first reliability issue is whether all emergency room visits during the specified time period were documented in the CHCS. Prior to embarking on this project, an inspection of emergency room appointment procedures was performed, and the procedures were deemed reliable. Another issue is that of CHCS data accuracy. For example, during this project it became apparent that many addresses for patients are incorrect as documented in CHCS. This is, in part, due to the mobile nature of the military population. However, it does not appear that other data accuracy issues associated with CHCS affected the findings of this project.

### *Ethical Considerations*

Privacy procedures and patient confidentiality standards were strictly adhered to throughout the study. Each questionnaire included a letter from the Deputy Commander for Administration outlining Privacy Act issues (Appendix C). During the study, individual patient questionnaires were assigned an identification number which was used in place of patient name or social security number. Published findings do not contain uniquely descriptive patient data.



## CHAPTER 3

### RESULTS

The categorization of the patients utilizing the emergency room is presented in Table 4 below, as obtained from CHCS data. Frequent users of the emergency room were defined for the study as patients having 4 or more visits in a one-year period. The percentages reflected below are for two successive 6-month periods; frequent users account for 11.37 percent of visits in the first period and 10.42 percent in the second period. The table indicates that the overall use of the emergency room declined by 10 percent during the second period, and declines of use were evidenced in all categories during the second time period. Interestingly, the 2, 3, and 4 visit categories decreased in nearly identical proportions (15.2%, 15.1%, and 15.8%); the 1 visit category decreased by 7% and the >5 visit category decreased by 27%.

Table 4. Patients Presenting To The ER By Frequency of Use In Each Time Period

	1 October 1995 - 30 April 1996				1 May 1996 - 31 September 1996			
Visits	Patients	%	$\Sigma$ Visits	%	Patients	%	$\Sigma$ Visits	%
1	12,027	73.50	12,027	52.03	11,270	75.53	11,270	54.72
2	2,948	18.02	5,896	25.51	2,501	16.76	5,002	24.29
3	855	5.22	2,565	11.10	726	4.87	2,178	10.57
4	304	1.86	1,216	5.26	256	1.72	1,024	4.97
>5	230	1.41	1,413	6.11	168	1.13	1,123	5.45
Total	16,364	100.00	23,117	100.00	14,921	100.00	20,597	100.00

### *Survey Responses*

654 questionnaires were mailed; a total of 161 surveys were returned for a total response rate of 24.62 percent. Although response rates lower than 50 percent are not uncommon for mail surveys the 24 percent response rate may impact upon the validity of the data. Indeed, Table 8 reports active duty and their dependents to be under-represented in the emergency room population as compared to the entire beneficiary population. As stated earlier, and established in other research projects, patients with four or more visits to the emergency room within the one-year period of interest were categorized as Frequent Users; patients with one visit to the emergency room within the same period were categorized as Comparison Group Users. Patients with two visits were categorized as Intermediate Users, with the idea that the data from this group might be interesting to look at in comparison to the two primary groups of interest. Table 5 depicts the user groups and the questionnaire response rates of the groups.

Table 5. Survey Response by User Groups

Groups	Replied	Non-Receipt	Did Not Reply	Totals
Comparison	41	28	120	189
Row %	21.69%	14.81%	63.49%	
Total %	6.27%	4.28%	18.35%	28.90%
Intermediate	46	24	138	208
Row %	22.12%	11.54%	66.35%	
Total %	7.03%	3.67%	21.10%	31.80%
Frequent Use	74	29	154	257
Row %	28.79%	11.28%	59.92%	
Total %	11.31%	4.43%	23.55%	39.30%
Totals	161	81	412	654
Total %	24.62%	12.39%	63.00%	100.00%

*Frequency of Use by Family Member Prefix (FMP)*

Table 6 reports frequency data by Family Member Prefix (FMP). The FMP is a code used by CHCS that identifies categories of beneficiaries eligible for medical care within our system. Eligible beneficiaries are : 1. an active duty or retired soldier, 2. a spouse (or former spouse) of an active duty or retired soldier, 3. dependent children of an eligible beneficiary, and 4. others who qualify in separate categories. Because this data was generated from CHCS, categories such as active duty/retired were not broken out. FMP distribution was relatively consistent across all groups.

Table 6. Family Member Prefix Frequency By Group

FMP	Comparison	Intermediate	Frequent Use	Totals
Children	9	12	15	36
Row %	25.00%	33.33%	41.66%	
AD/Retired	19	13	24	56
Row %	33.93%	23.21%	42.86%	
Spouse	12	21	34	67
Row %	17.91%	31.34%	50.75%	
Other	1	0	1	2
Row %	50.00%	0.00%	50.00%	
All Groups	41	46	74	161
Total %	0.254658	0.285714	0.459627	

When all of the data received through questionnaires was entered, it was possible to look at the FMP usage by groups with greater resolution, as it was now possible to identify usage by retirees and their dependents vs. active duty soldiers and dependents. This allows for a slightly

different view of the population than from straight Family Member Prefix reported earlier. Table 7 depicts these usage frequencies based on finer categorical resolution. The largest percentage of each usage group is composed of retired beneficiaries and their dependents. The comparison group had 48.78%; the intermediate user group 69.56%; and the frequent user group had 55.4% in this category. Statistical analysis indicated that differences were not statistically significant ( $\chi^2 = 11.91$ ,  $df = 8$ ,  $p = .15541$ ). In a sensitivity test of the statistic, the  $\chi^2$  value would have had to have been 15.508789 in order to reach significance.

Table 7. Family Member Prefix Frequency By Group- Greater Resolution

Groups	Active Duty	AD Depend	Retired	NonADDepend	Other	Totals
Comparison Row %	7 17.07%	12 29.27%	12 29.27%	8 19.51%	2 4.88%	41
Intermediate Row %	2 4.35%	11 23.91%	14 30.43%	18 39.13%	1 2.17%	46
Frequent User Row %	4 5.41%	24 32.43%	25 33.78%	16 21.62%	5 6.76%	74
Totals	13	47	51	42	8	161

*Total Population and Sample Population by Beneficiary Category*

While looking at the percentage difference of user category between groups it became apparent that a comparison between the emergency room population and the eligible user populations might be useful as an additional demographic. Table 8 reports the proportions of MACH's patient population that fall within the various beneficiary categories; the table also reports the percentages of survey respondents, as represented by the heading "Emergency Room %" that fell into each of these categories. The comparison shows that the active duty and active duty dependents are under-represented in the emergency room population and the retired and nonactive duty dependents are over-represented in the emergency room population in comparison to total population.

Table 8. Total Population and Sample Population By Beneficiary Category

Category	Total Eligible %	Emergency Room %
Active Duty	27	8
Active Duty Dependents	38	29
Retired	12	26
Non-Active Duty Dependents	18	31
Survivors/Other	4	5

The source for total eligible users was the Resource Analysis and Planning System (RAPS) data for eligible beneficiaries in the Martin Army Community Hospital catchment area. The numbers are the Fiscal Year 1996 population numbers.

*Frequency of Use by Age*

The variable Age had a range of 0 (less than a year old) through 83 years of age. The median age was 40. The variable was grouped by interval for analysis. Groups 6 and 7 had to be combined due to cell counts of less than 5. The distribution of ages by frequency groups in Table 9 below illustrates that there was very little variation across groups with respect to the number of visits to the emergency room during the year.

Table 9. Age Frequency by Group

Age	Comparison	Intermediate	Frequent Use	Totals
0-12 years	7	5	9	21
Column %	17.07%	10.87%	12.16%	
Total %	4.35%	3.11%	5.59%	13.04%
13-25 years	5	11	19	35
Column %	12.20%	23.91%	25.68%	
Total %	3.11%	6.83%	11.80%	21.74%
26-38 years	8	4	9	21
Column %	19.51%	8.70%	12.16%	
Total %	4.97%	2.48%	5.59%	13.04%
39-51 years	7	6	10	23
Column %	17.07%	13.04%	13.51%	
Total %	4.35%	3.73%	6.21%	14.29%
52-64 years	8	13	15	36
Column %	19.51%	28.26%	20.27%	
Total %	4.97%	8.07%	9.32%	22.36%
65+ years	6	7	12	25
Column %	14.63%	15.22%	16.22%	
Total %	3.73%	4.35%	7.45%	15.53%
Totals	41	46	74	161

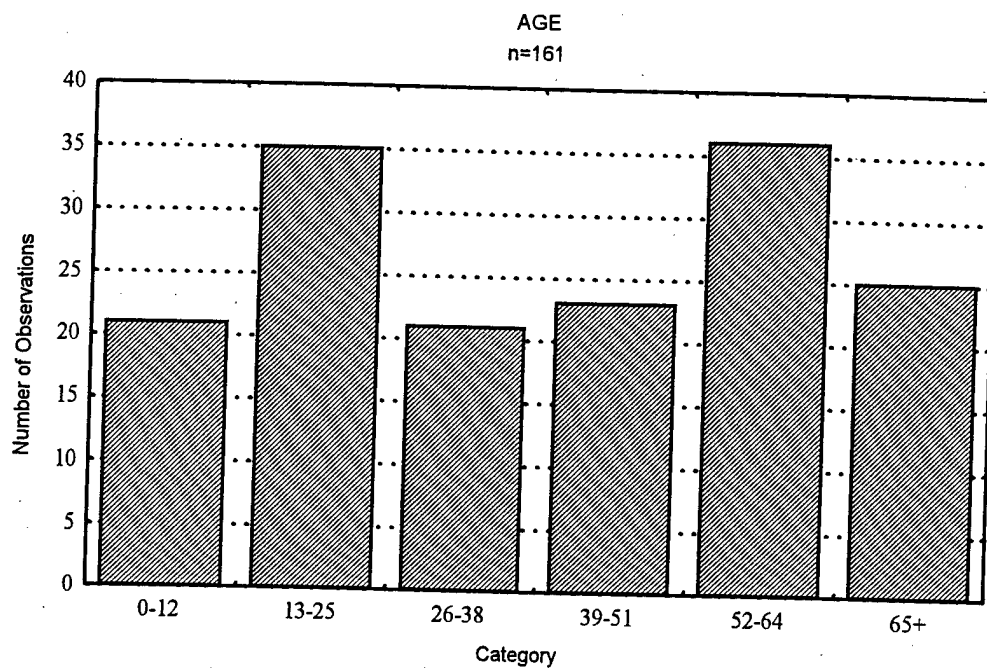


Figure 1.  
Bimodal

### Age Distribution of the Sample Population

Figure 1 above graphically depicts the bimodal distribution of age across all of the patient groups.

*Frequency of Use by Gender*

Emergency room usage varied quite a bit based on gender. Table 10 below illustrates that in the comparison group, the ratio of males to females was 61:39. However, in the frequent user group the ratio of males to females was 46:55. The intermediate users varied the most with a male to female ratio of 33:67.

Table 10. Gender Frequency by Group

Groups	Males	Females	Totals
Comparison	25	16	41
Row %	60.98%	39.02%	
Total %	15.53%	9.94%	25.47%
Intermediate	15	31	46
Row %	32.61%	67.39%	
Total %	9.32%	19.25%	28.57%
Frequent User	34	40	74
Row %	45.95%	54.05%	
Total %	21.12%	24.84%	45.96%
Totals	74	87	161
Total %	45.96%	54.04%	100.00%



*Frequency of Use by Urgency*

Table 11 reports the urgency of treatment variable was gathered by CHCS data query; it was determined by emergency room medical staff and entered into the CHCS database immediately following service to the patient. Each patient was triaged into one of three categories: emergent, urgent, or nonurgent. The criteria for these determinations is found in Appendix D.

In general, urgent patients have illnesses/injuries which could become life threatening or permanently disabling/disfiguring if not treated within 12 to 24 hours. Urgent patients are seen as soon as possible. Nonurgent patients have illnesses/injuries which are not life threatening, and are not in need of immediate treatment. Nonurgent patients may be seen at the emergency room, sent to the acute care "Fast Track", or may be referred to appropriate clinics. The nonurgent patient has typically been defined in the literature as an inappropriate user of the emergency room. The urgency variable has a larger sample size ( $n=465$ ), because it uses data recorded on every visit made to the emergency room by the sample populations. Approximately 70% of the visits for the frequent users and the intermediate users were nonurgent compared to 59% in the comparison group. Approximately 40 percent of the comparison group's visits were triaged as urgent compared to approximately 30 percent in the frequent users and intermediate users. Only three of 465 visits (for the 161 patients in this study) were triaged as emergent, representing less than one percent. Statistical analysis indicated the differences were not significant ( $\chi^2 = 3.45$ ,  $df=4$ ,  $p=.48610$ ).

Table 11. Urgency by Frequency Group

Group	Emergent	Urgent	Nonurgent	Totals
Comparison Row %	0 0.00%	17 41.46%	24 58.54%	41
Intermediate Row %	0 0.00%	27 29.67%	64 70.33%	91
Frequent Users Row %	3 .90%	100 30.03%	230 69.07%	333
All Grps	3	144	318	465

*Frequency of Use by Weekday/Weekend*

Table 12 below reports frequency data based on whether the emergency room was visited during the weekday or over the weekend (or holiday). This analysis uses a larger sample size (n=465), because it uses data recorded on every visit made to the emergency room by the patient groups. "Weekend" not only represents the number of visits made on a weekend, but also includes visits on a holiday. Weekday represents the number of visits made on a weekday. The weekend visits are slightly understated because they do not include visits made during second shift of the day preceding the weekend or holiday when the weekend would technically start. For example, a weekend does not begin until midnight Friday. Correspondingly, the weekday visits are slightly overstated; for example, Friday weekday includes the hours of 5:00 p.m through midnight, which most people typically associate with weekend time. Utilization of the emergency room does not vary by group with respect to weekends or weekdays.

Table 12. Weekend/Weekday Frequency by Group

Groups	Weekend	Weekday	Totals
Comparison	13	28	41
Column %	8.44%	8.78%	
Row %	31.71%	68.29%	
Intermediate	34	58	92
Column %	22.08%	18.18%	
Row %	36.96%	63.04%	
Frequent User	107	233	340
Column %	69.48%	73.04%	
Row %	31.47%	68.53%	
All Groups	154	319	473

*Frequency of Use by Shift*

Table 13 below reports frequency data for each group based on the time of day or shift that each patient visited the emergency room. Shift times are as follows:

\* First shift: 0801-1600

\* Second shift: 1601-2400

\* Third shift: 0001-0800

As presented in the table, third shift is used infrequently by each group. The frequent users and intermediate users visit most frequently during the first shift. First shift corresponds to the duty day, when clinics would be open, although this frequency table does not control for weekend visits when most clinics would be closed. The comparison group visited most frequently during second shift which corresponds to the time following a work day.

Table 13. Shift Frequency by Group

Groups	Shift 1	Shift 2	Shift 3	Totals
Comparison	14	20	7	41
Column %	6.45%	10.58%	10.45%	
Row %	34.15%	48.78%	17.07%	
Intermediate	46	33	13	92
Column %	21.20%	17.46%	19.40%	
Row %	50.00%	35.87%	14.13%	
Frequent User	157	136	47	340
Column %	72.35%	71.96%	70.15%	
Row %	46.18%	40.00%	13.82%	
All Groups	217	189	67	473

*Frequency of Use by Primary Care Manager (PCM)*

The determinant of whether a patient had a Primary Care Manager (PCM) was determined by questionnaire responses. This is a bit of a misnomer, as all patients who are entered in CHCS have been assigned a PCM. However, not all patients know that they have been assigned a PCM, for a variety of reasons. In addition, while some patients know that they have been assigned a PCM, they may not have ever met their PCM or have interacted so infrequently with the PCM that they do not even know the name of their PCM. Thus, patients were asked to name their family doctor (PCM); patients who could name their family doctor (or get close to the name!!) were determined to have some type of relationship with the PCM. The assumption underlying this is that if a patient has a relationship with a PCM, they will turn to the PCM or assigned clinic when in need of medical care before going to an emergency room, if possible. Table 14 below reports the frequency data for PCM.

Table 14. Primary Care Manager Presence by Group

Groups	PCM Unknown	PCM Known	Totals
Comparison	23	18	41
Row %	56.10%	43.90%	
Intermediate	14	32	46
Row %	30.43%	69.57%	
Frequent User	31	43	74
Row %	41.89%	58.11%	
Totals	68	93	161

*Frequency of Use by TRICARE Familiarity*

Table 15 reports the number of respondents familiar with the TRICARE program. Over 60% of patients within each group were familiar with the program. Statistical analysis indicated that differences were not statistically significant ( $\chi^2 = 1.12$ ,  $df = 2$ ,  $p = .57475$ ).

Table 15. TRICARE Familiarity Frequency by Group

Groups	Familiar	Not Familiar	Totals
Comparison	27	14	41
Row %	65.85%	34.15%	
Intermediate	32	13	45
Row %	71.11%	28.89%	
Frequent User	45	28	73
Row %	61.64%	38.36%	
Totals	104	55	159

*Frequency of Use by TRICARE Prime Enrollment*

Table 16 reports the reported frequency of emergency room use by groups by enrollment in TRICARE Prime. After the exclusion of missing data, 44.51% of those responding were Prime enrollees. Statistical analysis indicated that differences were not statistically significant ( $\chi^2 = 1.56$ ,  $df = 2$ ,  $p = .45866$ ).

Table 16. TRICARE Prime Enrollees by Group

Groups	Prime	NonPrime	Totals
Comparison	20	19	39
Row %	51.28%	48.72%	
Intermediate	17	28	45
Row %	37.78%	62.22%	
Frequent User	32	39	71
Row %	45.07%	54.93%	
Totals	69	86	155

*Frequency of Use by Insurance*

Table 17 reports the frequency respondents with other forms of health insurance. After the exclusion of missing data, 25.15% of the respondents had another form of health insurance.

Variation across groups was small at less than 13%.

Table 17. Insurance by Group

Groups	No Insurance	Other Insurance	Totals
Comparison	30	10	40
Row %	75.00%	25.00%	
Intermediate	31	15	46
Row %	67.39%	32.61%	
Frequent User	58	15	73
Row %	79.45%	20.55%	
Totals	119	40	159



*Frequency of Use by Stability of Location*

Table 18 reports the number of respondents that lived in the Fort Benning, Georgia, area for the entire data collection period, October 1, 1995 through September 30, 1996. Statistical analysis indicated that differences were statistically not significant ( $\chi^2 = 2.90$ ,  $df = 2$ ,  $p = .23512$ ).

Table 18. Location Stability by Group

Groups	Not in Area	In Area	Totals
Comparison	7	32	39
Row %	17.95%	82.05%	
Intermediate	5	36	41
Row %	12.20%	87.80%	
Frequent User	17	50	67
Row %	25.37%	74.63%	
Totals	29	118	147

*Frequency of Use by Tobacco Use*

Table 19 depicts tobacco use (smoking) within each group. As the table indicates, tobacco use was between 10-15 percent in each of the groups.

Table 19. Tobacco Use by Group

Groups	Non-Smoker	Smoker	Totals
Comparison	35	6	41
Row %	85.37%	14.63%	
Intermediate	41	5	46
Row %	89.13%	10.87%	
Frequent Use	62	11	73
Row %	83.56%	15.07%	
Totals	138	22	160

*Frequency of Use by Overweight Individuals*

Table 20 below reports the frequency of patients responding affirmatively to the question, "In the last two years has a physician suggested you lose weight?" The assumption here is that if a patient responds in the negative, he or she is of normal weight; if the patient responds in the positive, then he or she has been dealing with weight problems and may have been overweight (often associated with health risks) at the time that he or she visited the emergency room.

Statistical analysis indicated that differences were not statistically significant ( $\chi^2 = 3.22$ ,  $df = 2$ ,  $p = .20009$ ).

Table 20. Overweight Individuals by Group

Groups	Normal Weight	Overweight	Totals
Comparison	33	6	39
Row %	84.62%	15.38%	
Intermediate	40	6	46
Row %	86.96%	13.04%	
Frequent Use	53	18	71
Row %	74.65%	25.35%	
Totals	126	30	156

*Frequency of Use by Income Level*

Table 21 reports the income level intervals as reported by respondents. The median annual income in each frequency group was between \$20,000 and \$29,999. 42% of the comparison group earns more than \$30,000 annually, compared with 25% of frequent users and 30% of intermediate users. Statistical analysis indicated that differences were not statistically significant ( $\chi^2 = 10.89$ ,  $df = 10$ ,  $p = .36639$ ).

Table 21. Income Level by Group

Income Levels	Comparison	Intermediate	FrequentUse	Totals
<\$9,999	2	1	5	8
Column %	5.00%	2.33%	7.46%	
\$10-14,999	3	9	14	26
Column %	7.50%	20.93%	20.90%	
\$15-19,999	4	8	11	23
Column %	10.00%	18.60%	16.42%	
\$20-29,999	14	12	20	46
Column %	35.00%	27.91%	29.85%	
\$30-49,999	11	9	15	35
Column %	27.50%	20.93%	22.39%	
>\$50,000	6	4	2	12
Column %	15.00%	9.30%	2.99%	
Totals	40	43	67	150

*Frequency of Use by Hospital Admission*

Table 22 reports the frequency of admission resulting from an emergency room visit during the one year period of interest as reported by the respondents. The table shows that the likelihood of admission increases slightly as the frequency of visit increases. This data is somewhat incongruous with the CHCS source data on urgency of use depicted in Table 11. It implies a large number of admissions were made even though the triage category was not emergent. These admissions may be over stated or occurred as a result of physicians upgrading the triage urgency to emergent upon examination.

Table 22. Hospital Admissions by Group

Number of Admissions	Comparison	Intermediate	Frequent Use	Totals
None	32	29	45	106
Column %	78.05%	63.04%	60.81%	
One	7	10	9	26
Column %	17.07%	21.74%	12.16%	
Two	1	5	5	11
Column %	2.44%	10.87%	6.76%	
Three	0	0	6	6
Column %	0.00%	0.00%	8.11%	
Four	1	2	7	10
Column %	2.44%	4.35%	9.46%	
Five	0	0	2	2
Column %	0.00%	0.00%	2.70%	
Totals	41	46	74	161

*Frequency of Use by Alcohol Consumption*

Table 23 below reports alcohol consumption reported by patients in the frequency groups.

There is virtually no difference in the amounts of alcohol consumed between the groups.

Table 23. Alcohol Consumption By Group

Groups	None	1-5 drinks/wk	5-10 drinks/wk	11+ drinks/wk	Totals
Comparison	29	8	1	0	38
Row %	76.32%	21.05%	2.63%	0.00%	
Intermediate	39	5	1	1	46
Row %	84.78%	10.87%	2.17%	2.17%	
Frequent Use	58	9	4	2	73
Row %	79.45%	12.33%	5.48%	2.74%	
Totals	126	22	6	3	157

*Frequency of Use by Chronic Medical Condition*

Table 24 summarizes frequencies of those respondents reporting emergency room visits related to chronic or longstanding medical problem. The frequent users had a higher percentage of chronic problems than did the comparison group.

Table 24. Chronic Medical Conditions by Group

Groups	No Chronicity	Chronic Problem	Totals
Comparison	31	10	41
Row %	75.61%	24.39%	
Intermediate	35	11	46
Row %	76.09%	23.91%	
Frequent Use	47	27	74
Row %	63.51%	36.49%	
Totals	113	48	161

*Frequency of Use by Distance Traveled to Reach the Emergency Room*

Table 25 summarizes the distance traveled by respondents to get from home to the emergency room. Missing data was excluded from the frequency analysis. Interestingly, 82% of the respondents lived within 15 miles of Fort Benning. Only 6.9% of the respondents lived more than 26 miles from the emergency room. Of course, this finding is not surprising considering that many beneficiaries live on post. In addition, the nearby city of Columbus is not particularly large. It appears that those living the furthest from the emergency room are less likely to be frequent users. Statistical analysis indicated that differences were not statistically significant ( $\chi^2 = 5.97$ ,  $df = 8$ ,  $p = .65096$ ).

Table 25. Traveled Distance to the Emergency Room by Group

Groups	Live on post	0-5 miles	6-15 miles	15-25 miles	26+ miles	Totals
Comparison	13	4	14	5	5	41
Row %	31.71%	9.76%	34.15%	12.20%	12.20%	
Intermediate	7	9	19	7	4	46
Row %	15.22%	19.57%	41.30%	15.22%	8.70%	
Frequent Use	18	11	30	9	4	72
Row %	25.00%	15.28%	41.67%	12.50%	5.56%	
Totals	38	24	63	21	13	159



*Frequency of Use by Reason for Emergency Room Use*

Tables 26-33 report why respondents chose to use the emergency room for medical treatment. Missing data was excluded (n=158) and multiple responses were allowed. The original question asked respondents to rank their reasons for emergency room use in order of importance. Because of poor response to the prioritization effort, these variables were coded as dichotomous data.

a. Convenience: Table 26 summarizes the number of respondents who cited convenience (easier or quicker to access the emergency room than some other form of care) as a determinant of emergency room use.

Table 26. Convenience by Group

Groups	Convenience Percentages	Convenience Numbers	Total Group N's
Comparison	19.51%	8	41
Intermediate	13.04%	6	46
Frequent Use	15.49%	11	71
Totals	15.82%	25	158

b. After-hours Availability: Table 27 summarizes the number of respondents who cited extended hours of service, such as evenings, weekends, and holidays, as a reason for their use of the emergency room. Each group reported the same percentage response of 43%.

Table 27. After-hours Availability by Group

Groups	After-hours Percentages	After-hours Numbers	Total Group N's
Comparison	43.90%	18	41
Intermediate	43.48%	20	46
Frequent Use	43.66%	31	71
Totals	43.67%	69	158

c. Inability to Contact MACH Outpatient Clinic Appointment Schedulers: Table 28 summarizes the number of respondents who cited an inability to contact clinic appointment schedulers as a reason for their use of the emergency room. The groups were uniform in response, with the frequent users citing this inability to contact a clinic slightly more than the comparison group.

Table 28. Schedulers Unavailable by Group

Groups	Schedulers Unavailable Percentages	Schedulers Unavailable Numbers	Total Group N's
Comparison	19.51%	8	41
Intermediate	19.57%	9	46
Frequent Use	29.58%	21	71
Totals	24.05%	38	158

d. No Clinic Appointments Available: Table 29 summarizes the number of respondents who were able to talk to schedulers but cited unavailability of clinic appointments as a reason for their emergency room usage. There was a 15% variation between the intermediate user group and the comparison group; frequent users only cited this reason 6% more often than the patients in the comparison group.

Table 29. No Clinic Appointments Available by Group

Groups	No Appts. Percentages	No Appts. Number	Total Group N's
Comparison	14.63%	6	41
Intermediate	30.43%	14	46
Frequent Use	21.13%	15	71
Totals	22.15%	35	158

e. Better Quality of Care: Table 30 summarizes the number of respondents who cited that the emergency room provides better quality of care than other health care resources as a reason for their use of the emergency room. Less than 10% of each group cited this as a determinant of use.

Table 30. Better Quality of Care by Group

Groups	Better Care Percentages	Better Care Numbers	Total Group N's
Comparison	7.32%	3	41
Intermediate	2.17%	1	46
Frequent Use	9.86%	7	71
Totals	6.96%	11	158

f. Lack of PCM: Table 31 summarizes the number of respondents who cited a lack of a designated primary care manager as a reason for their emergency room use. No more than 10% of any frequency group cited this as a reason for use.

Table 31. Lack of PCM by Group

Groups	No PCM Percentages	No PCM Numbers	Total Group N's
Comparison	9.76%	4	41
Intermediate	10.87%	5	46
Frequent Use	7.04%	5	71
Totals	8.86%	14	158

g. Perceived Medical Condition As Emergency: Table 32 summarizes the number of respondents who cited their perception of their medical condition as an emergency as the reason for their emergency room use. This reason for use drew the highest rate of response from all groups.

Table 32. Emergent Condition by Group

Groups	Emergency Percentages	Emergency Numbers	Total Group N's
Comparison	70.73%	29	41
Intermediate	54.35%	25	46
Frequent Use	61.97%	44	71
Totals	62.02%	98	158

h. Referrals by Medical Staff: Table 33 summarizes the number of respondents who cited referral by physician or medical staff as a reason for their usage of the emergency room. The frequent users cited this reason 8% more than the comparison group users did.

Table 33. Referrals by Medical Staff by Group

Groups	Referral Percentages	Referral Numbers	Totals
Comparison	17.07%	7	41
Intermediate	21.74%	10	46
Frequent Use	25.35%	18	71
Totals	22.15%	35	158

### *Significant Stressful Events*

Table 34 summarizes the number of stressful events that were affecting them during the prior 18 months, which included the time of this one-year period, as reported by respondents. The highest possible sum a respondent could obtain was 12. Questionnaires with no stressful events checked were coded as having no significant stressors. The frequent users showed a trend toward higher levels of stress, with 60% of the population reporting at least one significant stressor in the preceding 18 months. 37% of patients in the comparison group reported at least one significant stressor during the same time span. Statistical analysis indicated that differences were not statistically significant ( $\chi^2 = 16.52$ ,  $df = 12$ ,  $p = .16856$ ).

Table 34. Stressors by Group

Number of Stressors	Comparison	Intermediate	Frequent	Totals
None	26	19	29	74
Column %	63.41%	41.30%	39.19%	
One	6	13	21	40
Column %	14.63%	28.26%	28.38%	
Two	3	6	9	18
Column %	7.32%	13.04%	12.16%	
Three	4	3	9	16
Column %	9.76%	6.52%	12.16%	
Four	2	3	3	8
Column %	4.88%	6.52%	4.05%	
Five	0	0	3	3
Column %	0.00%	0.00%	4.05%	
Six	0	2	0	2
Column %	0.00%	4.35%	0.00%	
Totals	41	46	74	161

### *Sources of Medical Advice*

Sources of Medical Advice: Tables 35 through 40 summarize the different sources of medical advice available to the respondents. The survey question was designed to gauge the sources of medical information used by the respondents that might be used in making a determination to wait, treat at home, or go to the emergency room. The question had some limitations in that it did not include a category for "other sources". One respondent noted that she used the "Dial A Nurse" line at a local hospital. Respondents not citing any sources were coded as having no external sources of medical advice.

Table 35. Advice from Family Other than Spouse by Group

Groups	Family Advice Percentages	Family Advice Numbers	Totals
Comparison	29.27%	12	41
Intermediate	23.91%	11	46
Frequent Use	21.62%	16	74
Totals	24.22%	39	161

Table 36. Advice from Medical Self-Help Book by Group

Groups	Self-Help Book Percentages	Self-Help Book Percentages	Totals
Comparison	19.51%	8	41
Intermediate	19.57%	9	46
Frequent Use	20.27%	15	74
Totals	19.87%	32	161

Table 37. Advice from Close Friends by Group

Groups	Friends' Advice Percentages	Friends' Advice Numbers	Totals
Comparison	12.20%	5	41
Intermediate	23.91%	11	46
Frequent Use	17.57%	13	74
Totals	18.01%	29	161

Table 38. Advice from Church Members by Group

Groups	Church Advice Percentages	Church Advice Numbers	Totals
Comparison	2.44%	1	41
Intermediate	8.70%	4	46
Frequent Use	5.41%	4	74
Totals	5.59%	9	161

Table 39. Advice from Neighbors by Group

Groups	Neighbor Advice Percentages	Neighbor Advice Percentages	Totals
Comparison	12.20%	5	41
Intermediate	4.35%	2	46
Frequent Use	2.70%	2	74
Totals	5.59%	9	161



Table 40. Advice from Unit's Family Support Group (FSG), by Group

Groups	FSG Advice Percentages	FSG Advice Numbers	Totals
Comparison	2.44%	1	41
Intermediate	2.17%	1	46
Frequent Use	1.35%	1	74
Totals		3	161

*Frequency of Use by Educational Level*

Table 41 reports educational level by group before recoding for analysis. One limitation of this particular question was the lack of a category for 'other'. This was controlled for by excluding missing data and data coded as 'C' for child and excluding all records where age < 17. After recoding, the data was suitable for  $\chi^2$  analysis with all observed cell values equal to 4 or more. Statistical analysis indicated that differences were not statistically significant ( $\chi^2 = 9.52$ , df=6, p= .14824).

Table 41. Educational Level by Group

Educational Level	Comparison	Intermediate	Frequent Use	Totals
Some High School	6	7	5	18
Column %	16.67%	17.50%	7.94%	
High School Grad	8	10	22	40
Column %	22.22%	25.00%	34.92%	
Obtained GED	2	4	10	16
Column %	5.56%	10.00%	15.87%	
Some College	12	12	18	42
Column %	33.33%	30.00%	28.57%	
College Graduate	5	4	6	15
Column %	13.89%	10.00%	9.52%	
Post Graduate Work	3	3	2	8
Column %	8.33%	7.50%	3.17%	
Totals	36	40	63	139

## CHAPTER 4

### DISCUSSION

The emergency room at Martin Army Community Hospital experienced a 10 percent decline in visits between the two consecutive 6-month periods of the study. I am unsure whether the decrease occurred as a result of an intervention such as extending clinic hours or was perhaps due to the reduction in eligible beneficiaries from 73,107 in FY 1995 to 67,442 in FY 1996 as reported by the Resource Analysis Planning System (RAPS). However, new DoD health policy may reverse this trend.

With the advent of Enrollment Based Capitation (EBC) at the beginning of Fiscal Year (FY) 1998, emergency room use may begin to increase. Formulated to induce operating efficiencies, EBC allocates resources to the Medical Treatment Facilities (MTF) based upon enrollment in TRICARE Prime, a Health Maintenance Organization (HMO) model managed care option. Prime enrollment is free to active duty soldiers and their families but costs retirees and their eligible non-active duty dependents \$460 dollars per year. Those retirees and their dependents who are aged 65 and over are not presently eligible for Prime enrollment. The incentive to the Military Health Services System (MHSS) is to treat those patients that provide revenue. Thus, the hospital will continually be right sizing to most nearly match the level of effort required to treat the Prime enrolled population. The corollary here is that all non-Prime care will become increasingly scarce. Although this is not necessarily the intent, and is not yet happening

at MACH, as access becomes more difficult in the primary care clinics, utilization patterns may shift to the portal of guaranteed entry, the emergency room. Given the expensive and episodic nature of emergency room care this is not a desirable alternative form of access for the MHSS or the patient.

In reviewing the results of this study one aspect became very apparent; the variables that had statistical significance in the literature did not yield significance when applied to the MACH emergency room population. There may be a multitude of reasons for this discrepancy. First, it appears that the populations are different. This is in itself significant and is supported by the findings that each emergency room population is different depending upon its location in relation to population centers (Torrens, 1970; Jones, 1982). MACH is particularly different in that it serves a unique population. The emergency room is located on a military reservation and not in the civilian population center of Columbus, Georgia. Further, non-emergency access is restricted to eligible beneficiaries who have historically not paid any out of pocket expense for medical treatment.

The literature suggests that emergency rooms play three major roles within a community to varying degrees: 1.) trauma treatment center, 2.) physician substitute when outpatient clinics are not available, and 3.) family physician to the poor (Torrens, 1970). The results of this study suggest that while the MACH emergency room is like other emergency rooms in performing these functions, its population profile is different enough to generate different results with the same variables used in other studies.

Specific results of this study show that none of the variables considered were statistically significant in differentiating between the comparison and frequent user groups. The variable of

gender did show an initial promise, however. Initial  $\chi^2$  analysis showed the variable to be statistically significant ( $\chi^2 = 7.02$ ,  $df=2$ ,  $\alpha = .05$ ,  $p = .02985$ ). The result was representative of the large difference between the comparison group (M:F, 60:40) and the intermediate frequency users (M:F, 33:67). When the intermediate group was excluded from the analysis, the results were not statistically significant ( $\chi^2 = 2.39$ ,  $df=1$ ,  $\alpha = .05$ ,  $p = .12247$ ). Thus it may be concluded that the difference between the comparison and frequent user groups was not sufficient to reject the null hypothesis. Past studies have shown mixed results with respect to gender. Parboosingh found a slight increase in the proportion of females as the frequency of visit increased (Parboosingh, 1987). Ullman found no association between gender and frequency of visit (Ullman, 1975). The fact that the significant difference occurred in the intermediate user group and was not replicated in the frequent user group leads me to believe that the statistically significant result may be a Type I error. With an  $\alpha = .05$ , there is a 5 percent chance that the null hypothesis will be incorrectly rejected.

In view of the inconclusive findings with regard to statistical significance, it seemed appropriate to discern common denominators among the frequent users by examining their self-reported reasons for emergency room use. The most common reason cited by the respondents was the perception of the their symptoms as a medical emergency (Table 32). The literature supports the premise that patients perceive urgency of symptoms differently than physicians. In one study, a prospective assessment of patients by physicians indicated that 65.8% needed care within 12 hours. The patients' perceptions were that 85% needed care within 12 hours (Hunt, 1996). Another separate survey looked at 268 patients in an urban emergency room that had been triaged as nonurgent; 82% of these same patients rated their symptoms as urgent. Clearly, acuity

categories assigned by health care providers do not correlate well with the patients' individual acuity ratings. In the MACH study the nonurgent acuity category accounts for 70% of the visits by the frequent and intermediate users, and 58% of the visits by the comparison group (Table 11). While these percentages were generated as urgency data by medical staff following each patient's emergency room visit (and entered into CHCS database) and the data in Table 32 are urgency data reported by respondents and generalized across all of the emergency room visits made by each respondent, a generalized comparison can still be made. The comparison shows that while medical staff classified 69 percent of frequent user visits as nonurgent, 62 percent of frequent users reported that they visited the emergency room because their condition was emergent. This further illustrates that patient perception of acuity does not correspond with triage acuity rating.

The second most frequently cited reason for emergency room use was that it offered after-office hours care (Table 27). When combined with the related use attribute of convenience (Table 26), we can generalize that 60% are of all users relate emergency room usage to access problems with clinics, although this notion seems at odds with the usage patterns of the respondents in regard to weekday/weekend or shift visit patterns (Tables 12 and 13).

Tables 12 and 13 also reveal that the MACH patient was more likely to visit the emergency room on a weekday during the first shift. This corresponds closely to the duty day when clinics are open and thought to be accessible. This same pattern is supported by the literature. In the 1980 Patient Urgency Study, there was little variation in patient volume by day of the week, but the 8:00 a.m. to 4:00 p.m. shift was the busiest (Guterman, 1985). Ullman found similar results a decade earlier in a sampling of a population of 46,527 visits to an emergency room spanning a 1 year period. The majority of the visits occurred between 8:00 a.m. and 4:00

p.m. (Ullman, 1975).

Results suggest that in the absence of statistically significant determinants of use, the self-reported reasons of 1) perception of the medical condition as an emergency and 2) perception of access problems with clinics are the primary determinants for use of the emergency room by frequent users.

Additional findings include the over-representation of retired and non-active duty dependents, and the under-representation of active duty and active duty dependents in the sample population.

## CHAPTER 5

### CONCLUSIONS

The literature on high frequency emergency room usage is replete with variables of statistical significance. However these variables were not statistically significant determinants of use for the MACH emergency room population. The implication here is that the military beneficiary population does not mirror the civilian population in emergency room usage. This fact, in and of itself, is significant in that it points to a requirement for further study to discern whether there are differences between normal users and high frequency users in a military beneficiary population. Another implication or way to frame the absence of statistical significance is to assume that the outpatient system has shortcomings in meeting the access needs of the population. If the outpatient system responded the same way to all patients, this could account for some of the lack of variability between the comparison group and the frequent user group. If this is the case, addressing access deficiencies in the outpatient system could lead to care being delivered in a more appropriate setting. On the other hand, efforts to expand access to alternative outpatient clinics may have little impact on emergency room use for nonurgent conditions if patients believe that their problems constitute an emergency. People will use health care facilities according to their perceived needs rather than according to the expectations of those who have designed the system. However, the evolving discipline of demand management holds promise for being able to modify patient perceptions through education.



## CHAPTER 6

### RECOMMENDATIONS

Although beyond the scope of this study, a tailored demand management initiative targeted at the frequent users of the emergency room would be a good way to continue to learn about the access problems in the outpatient health care delivery while gaining increased understanding of the determinants of emergency room use in a military beneficiary population.

Approaches to the demand management issue of changing a patient's perception of symptoms are many and varied. An approach which might be effective is below.

1. Identify the frequent inappropriate users of the emergency room by querying CHCS for patients meeting a "frequent user" criterion and selecting out those patients who received a triage category of nonurgent.

2. From this group of inappropriate users, determine which perceived their symptoms as emergent. This might require personal interview or telephone interview. Interview should collect information regarding the factors that made the incident seem emergent to the patient.

3. Follow up by the Primary Care Manager could be used for education and negative reinforcement of the behavior. Even something as simple as taking the patient through the decision algorithm in the self help book Taking Care Of Yourself, would reinforce the use of the book and confirm its advice as being accurate with expert testimony from the physician. As behavior is modified and visits became appropriate, telephone follow-up would continue to

reinforce the correct decision.

Demand management is a very likely candidate for use in the altering of patient perception of their symptoms. As the treatment of nonurgent care is moved from the expensive and episodic emergency room, costs will decrease and the continuity of care will become much better.

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## APPENDIX A. CHCS Ad Hoc Query Code

APPENDIX A  
CHCS ADHOC QUERY CODES

y (YES)

Name of SORT TEMPLATE: gs adm res sort//

DESCRIPTION:

1>

READ ACCESS: SsDdAa&#LlRrKkNnOoHhPp Replace

WRITE ACCESS: SsDdAa&#PpLlRrKkNnOoHh Replace

USER #: 303//

Associated PRINT TEMPLATE:

Sort by: APPOINTMENT DATE/TIME'@ Replace APPOINTMENT DATE/TIME

Earliest APPOINTMENT DATE/TIME: 01 Oct 1995// (01 Oct 1995)

Latest APPOINTMENT DATE/TIME: 30 Mar 1996// (30 Mar 1996)

Within APPOINTMENT DATE/TIME, Sort by: CLINIC;1// CLINIC

Select CLINIC: EMERGENCY ROOM// EMERGENCY ROOM EMERGENCY

CLINIC MARTIN ARMY COMMUNITY HOSPITAL BIAA

Within CLINIC, Sort by: APPOINTMENT STATUS'@;2 Replace APPOINTMENT

STATUS

Select APPOINTMENT STATUS: KEPT// KEPT KEPT

Select another APPOINTMENT STATUS: WALK-IN// WALK-IN WALK-IN

Select another APPOINTMENT STATUS: S-CALL// S-CALL S-CALL

Select another APPOINTMENT STATUS: TEL-CON// TEL-CON TEL-CON

Select another APPOINTMENT STATUS: OCC-SVC// OCC-SVC OCC-SVC

Select another APPOINTMENT STATUS:

Within APPOINTMENT STATUS, Sort by: NAME@// NAME

Start with NAME: FIRST//

Within NAME, Sort by:

Store Sort logic in Template: gs adm res sort// gs adm res sort (12/17/96) USER #303  
FILE #44.2

DATA ALREADY STORED THERE ...OK TO PURGE?

Answering 'YES' will cause this Template to be re-written

DATA ALREADY STORED THERE ...OK TO PURGE? y (YES)

Should Template user be asked 'FROM'-'TO' range for 'APPOINTMENT DATE/TIME',  
without special defaults? YES// (YES)

Should Template user be asked to 'Select CLINIC',  
without special default? NO// (NO)

Should the precise 'Select' value you have entered  
always be used in sorting by CLINIC? YES// (YES)

Should Template user be asked to 'Select APPOINTMENT STATUS'? NO// (NO)

First Print FIELD: [adm res ??

First Print FIELD: [gdss adm res



1	gs adm res 1 visit	(12/17/96)	USER #303	FILE #44.2
2	gs adm res 25 appt	(09/18/96)	USER #303	FILE #44.2
3	gs adm res 25 print	(09/20/96)	USER #303	FILE #44.2
4	gs adm res max visit	(12/5/96)	USER #303	FILE #44.2

Choose 1-4: 1 gs adm res 1 visit

Want to edit 'gs adm res 1 visit' Template? NO// y (YES)

NAME: gs adm res 1 visit//

DESCRIPTION:

1>

READ ACCESS: SsDdAa&#PpLlRrKkNnOoHh Replace

WRITE ACCESS: SsDdAa&#PpLlRrKkNnOoHh Replace

First Print FIELD:

SETPARAM(\$\$(INTERNAL(NAME)=PARAM("PTN"):1+PARAM("CTR"),1:1),"CTR");X

Replace

Then Print FIELD: SETPARAM(INTERNAL(NAME),"PTN");X Replace

Then Print FIELD: SETPARAM(\$\$(NAME,1,20),"NM");X Replace

Then Print FIELD: NAME://

Then Print PATIENT FIELD: SETPARAM(#8000,"SSN");X

Replace

By '#8000', do you mean the PATIENT 'FMP/SSN' Field? YES// (YES)

Then Print PATIENT FIELD: SETPARAM(\$\$(SEX,1,1)\_"%"\_AGE,"SXG");X

Replace

Then Print PATIENT FIELD: SETPARAM(ENCOUNTER:CHIEF COMPLAINT,"CMP2");X

Replace

By 'ENCOUNTER', do you mean the PATIENT APPOINTMENT 'ENCOUNTER PTR' Field?

YES//

(YES)

Then Print PATIENT FIELD:

SETPARAM(\$\$(PARAM("CTR")=1:DATESTRING(APPOINTMENT  
DATE/TIME),PARAM("CTR")<5:PARAM("APT")\_"%"\_DATESTRING(APPOINTMENT  
DATE/TIME),1:PARAM("APT")),"APT");X

Replace

Then Print PATIENT FIELD: SETPARAM(\$\$(PARAM("CTR")=1:ARRIVAL  
CATEGORY,PARAM("CTR")<5:PARAM("ARR")\_"%"\_ARRIVAL  
CATEGORY,1:PARAM("ARR")),"ARR");X

Replace

Then Print PATIENT FIELD:

SETPARAM(\$\$(PARAM("CTR")=1:PARAM("CMP2"),PARAM("CTR")<5:PARAM("CMP")  
\_"%"\_PARAM("CMP2"),1:PARAM("CMP")),"CMP");X

Replace

Then Print PATIENT FIELD: SETPARAM(OUTPATIENT RECORD LOCATION,"OPR");X

Replace

Then Print PATIENT FIELD: //

Then Print FIELD:

```
$$((PARAM("LSTCTR")=4)&(PARAM("PTN1")'=PARAM("PTN"))):(" _PARAM("LSTCTR"  
)_)" _ "<--%" _PARAM("NM1")_DUP("  
",20-$L(PARAM("NM1")))_%" _PARAM("SXG1")_%" _PARAM("SSN1")_%" _PARAM("  
OPR1")_%" _PARAM("APT1")_%" _PARAM("ARR1")_%" _PARAM("CMP1"),1:"");C1;X
```

Replace

Then Print FIELD: SETPARAM(PARAM("PTN"),"PTN1");X Replace

Then Print FIELD: SETPARAM(PARAM("CTR"),"LSTCTR");X

Replace

Then Print FIELD: SETPARAM(PARAM("NM"),"NM1");X Replace

Then Print FIELD: SETPARAM(PARAM("SSN"),"SSN1");X Replace

Then Print FIELD: SETPARAM(PARAM("SXG"),"SXG1");X Replace

Then Print FIELD: SETPARAM(PARAM("OPR"),"OPR1");X Replace

Then Print FIELD: SETPARAM(PARAM("ARR"),"ARR1");X Replace

Then Print FIELD: SETPARAM(PARAM("CMP"),"CMP1");X Replace

Then Print FIELD: SETPARAM(PARAM("APT"),"APT1");X Replace

Then Print FIELD:

Heading: @//

Footnote:

Store Print logic in Template: gs adm res 1 visit// gs adm res 1 visit gs adm res 1 visit  
(12/17/96) USER #303

FILE #44.2

TEMPLATE ALREADY STORED THERE.... OK TO REPLACE? y (YES)

Do you always want to suppress SubHeaders when printing Template? YES// (Yes)

DEVICE: RIGHT MARGIN: 80// ^

~[?7h

## APPENDIX B. Survey Form

**APPENDIX B**  
**Emergency Room Utilization Questionnaire**

If the person to whom this survey is addressed is unable to fill it out themselves, we would like a spouse, parent, friend or significant other to complete this on their behalf.

1. Are you filling out the survey for someone other than yourself? ☐ Yes ☐ No

2. To which category of beneficiary do you, the subject of this survey, belong?

- ☐ Active Duty  
☐ Active Duty Family Member  
☐ Retired

- ☐ Family Member of Retiree  
☐ Other \_\_\_\_\_

3. What is the sponsor's social security number? \_\_\_\_\_ (Optional)

4. What is your age? \_\_\_\_\_

5. What is your gender? ☐ Male ☐ Female

6. What is your Zip Code? \_\_\_\_\_

7. Who is your family doctor here at Martin Army Hospital? \_\_\_\_\_

8. Have you had a family doctor here for the last 18 months? ☐ Yes ☐ No

9. Which Clinic do you use? \_\_\_\_\_

10. Are you familiar with the Army's new TRICARE program? ☐ Yes ☐ No

11. Are you enrolled in TRICARE PRIME? ☐ Yes ☐ No

12. Do you have any other form of health insurance? ☐ Yes ☐ No

13. When did you move into the Ft. Benning area?  
☐ 1992 or earlier    ☐ 1993    ☐ 1994    ☐ 1995    ☐ 1996    ☐ N/A

14. Did you live in the Ft. Benning area for the complete year of 1 October 1995 through 30 September 1996?  
☐ Yes ☐ No

15. Do you smoke? ☐ Yes ☐ No

16. In the past 2 years has a physician suggested that you lose weight? ☐ Yes ☐ No

17. What is your combined yearly family income (gross - no taxes taken out)?  
☐ \$9,999 or less    ☐ \$15,000 -19,999    ☐ \$30,000-49,999  
☐ \$10,000-14,999    ☐ \$20,000-29,999    ☐ \$50,000- and up

18. How many emergency room visits have resulted in your admission to the hospital in the last 18 months? \_\_\_\_\_

19. What percentage (must add up to 100%) of your visits to the emergency room are:

Emergency (life threatening or extreme pain) \_\_\_\_\_ %  
Urgent but not an emergency \_\_\_\_\_ %  
Non-urgent - could have waited one or two days \_\_\_\_\_ %

20. How much alcohol do you consume each week?

- ☐ None      ☐ 1 - 5 drinks      ☐ 5-10 drinks      ☐ 11 or more drinks

21. List recurring symptoms, if any, that have brought you to the emergency room over the past 18 months to 2 years. For example, shortness of breath, intense pain, dizziness, fever, chest pain, suicidal ideation.

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22. Are the symptoms you listed in question number 20 related to a longstanding or chronic medical problem? For example, diabetes, asthma, heart disease, etc. ☐ Yes      ☐ No

23. How far do you travel to get to the emergency room?  
☐ Reside on post      ☐ Reside off-post 6-15 miles      ☐ Reside off-post 26 + miles  
☐ Reside off-post 0-5 miles      ☐ Reside off-post 15-25 miles

24. Indicate the primary reasons you use the ER instead of going to a clinic (If more than one reason applies prioritize the reasons: 1 being the most important reason, followed by 2, 3, etc.):

- ☐ It is more convenient (easier or quicker)
- ☐ It offers after-office hours (evening/weekend)
- ☐ Unable to get through to clinic appointment-schedulers
- ☐ No clinic appointments available
- ☐ The level of care is better than in the clinics
- ☐ Do not have a designated primary care physician
- ☐ Felt that the condition was an emergency
- ☐ Was referred to the ER by a physician or other hospital staff. For example you may have been told by a physician or other medical staff to go to the ER if you experience certain symptoms.
- ☐ Other \_\_\_\_\_

25. During the last 18 months have you experienced significant personal stress resulting from any of the following? Check all that apply.

- |   |                                     |   |
|---|-------------------------------------|---|
| <input type="checkbox"/> marital difficulty, divorce            | <input type="checkbox"/> illness    | <input type="checkbox"/> work difficulty                    |
| <input type="checkbox"/> arrest, incarceration, victim of crime | <input type="checkbox"/> loneliness | <input type="checkbox"/> death of a family member or friend |
| <input type="checkbox"/> loss of job or new job                 | <input type="checkbox"/> retirement | <input type="checkbox"/> financial difficulty               |
| <input type="checkbox"/> problems with access to health care    | <input type="checkbox"/> marriage   | <input type="checkbox"/> child rearing difficulty           |

26. Do you have anyone at home or in the community that you ask for medical advice? Check all that apply.

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Family other than your spouse             | <input type="checkbox"/> Close friends  | <input type="checkbox"/> Neighbors                 |
| <input type="checkbox"/> <u>Taking Care of Yourself</u> , or other | <input type="checkbox"/> Church members | <input type="checkbox"/> Unit Family Support Group |

27. What is the highest educational level you have attained?

- |   |                                       |   |
|---|---------------------------------------|---|
| <input type="checkbox"/> Some high school     | <input type="checkbox"/> Obtained GED | <input type="checkbox"/> Undergraduate Degree |
| <input type="checkbox"/> Finished high school | <input type="checkbox"/> Some college | <input type="checkbox"/> Post Graduate Degree |

28. Please use the space below and the back of the page to make any comments or suggestions pertaining to the ER.

Thank you for your assistance.

## APPENDIX C. Letter To Participants



DEPARTMENT OF THE ARMY  
HEADQUARTERS, UNITED STATES ARMY MEDICAL DEPARTMENT ACTIVITY  
FORT BENNING, GEORGIA 31905-6100

April 10, 1997

Office of the Deputy Commander for Administration

«PHENIX\_CITY», «ALABAMA» «M\_36869»  
«M\_4A1»

Dear Mr. «M,

Martin Army Community Hospital is requesting your help in gathering important information about your health care. The enclosed survey asks general questions aimed at understanding the reasons that you and our other beneficiaries utilize our emergency room.

You were selected from a scientifically designed random sample of patients seen in the emergency room. As in any sample survey, it is important that you respond so we may obtain the most complete understanding of your use of the emergency room. Your feedback will offer the Commander of Martin Army Community Hospital and the entire leadership of the Military Health Services System valuable information for improving the services and the health care we provide. Once you have answered all the questions, please detach this cover letter and return only the questionnaire (and any written comments you make) in the enclosed postage-paid envelope at your earliest possible convenience.

Your answers to this questionnaire will be held in the strictest confidence, and you will not be personally identified in any reports or release of survey data. Only authorized personnel will have access to your name and address, and only for mailing purposes. Information which might be used to identify specific individuals will be removed from the files, and only group statistics will be reported. Any written comments you provide will be forwarded directly to the Commander, so please do not identify yourself in your comments.

I urge you to invest the five minutes which this questionnaire will require to help us better understand and improve our emergency room operations. To show our appreciation for your prompt response you may receive free of charge the book, Take Care Of Yourself, as well as a class on its use. To receive your copy call Community Health Nursing at 545-4041 to schedule an appointment to attend the class and receive the book.

Thank you for your assistance.

Sincerely,

Stephen L. Markelz  
Colonel, U.S. Army  
Deputy Commander For Administration

Enclosure

## APPENDIX D. Triage Instructions



## APPENDIX D

### TRIAGE

This emergency room sees patients based on the severity of their injuries/illnesses, not on the order of their arrival. Patients are seen according to three priority categories.

1. Emergent: Patients who have life threatening illnesses/injuries who could die if not seen immediately. This includes (but is not limited to) patients with extreme difficulty breathing, heart attacks, seizures, severe bleeding which does not stop with pressure, severe eye injuries, fevers greater than 105 degrees (infants less than 8 weeks with fever greater than 100.5 degrees). These patients are seen before anyone else.

2. Urgent: Patients who have illnesses/injuries which could become life threatening or permanently disabling/disfiguring if not treated within 12 to 24 hours. Examples include fractured limbs, lacerations, abdominal pain of less than 48 hours duration, possible miscarriages, migraine headaches, fainting and other acute problems. These patients will be seen as quickly as possible, but may need to wait to be seen.

3. Routine: Patients who have illnesses/injuries which are not life threatening, and are not in need of immediate treatment. Included in this category is chronic back pain, prescription refills, colds, skin problems, physical exams for school or work, and pregnancy tests. These patients may be seen at the emergency room, sent to the acute care "Fast Track", or may be referred to appropriate clinics.

Patients whose medical condition worsens should inform the triage nurse so that they can be re-evaluated. The goal of the MACH emergency room is to see everyone within one hour; however, this may not be possible, depending on how many patients are waiting, ambulance arrivals, and treatment of emergent patients. When patients are waiting longer than three hours, back-up physicians are called in to help, when possible.